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GASB STATEMENT NO. 68 REPORT

FOR THE

CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM

PREPARED AS OF JUNE 30, 2020

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

February 11, 2021

Board of Directors
Connecticut State Teachers' Retirement System
165 Capitol Ave
Hartford, CT 06106-1673

Members of the Board:

Presented in this report is information to assist the Connecticut State Teachers' Retirement System in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 68 and to identify the information to be provided by the actuary, Cavanaugh Macdonald Consulting (CMC). The information is presented for the period ending June 30, 2020 (the Measurement Date).

GASB Statement Number 68 establishes accounting and financial reporting requirements for governmental employers that provide pension benefits to their employees through a trust.

The annual actuarial valuation used as a basis for much of the information presented in this report, including the Net Pension Liability, was performed as of June 30, 2020. The valuation was based upon data, furnished by the Retirement System staff, for active, inactive and retired members along with pertinent financial information. The schedules contained within this report for participating employers are based on the expected contribution effort as measured June 30, 2020, the date of the latest biennial valuation.

In order to prepare the results in this report we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

Please note that we are preparing this report during a pandemic. We have considered available information, but do not believe that there is yet sufficient data to warrant the modification of any of our assumptions. We will continue to monitor the situation and advise the Board in the future of any adjustments that we believe would be appropriate.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the System, and on actuarial assumptions that are internally consistent and individually reasonable based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System and, in our opinion, meet the requirements of GASB 68. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

These results are only for financial reporting and may not be appropriate for funding purposes or other types of analysis. Calculations for purposes other than satisfying the requirements of GASB 67 and GASB 68 may produce significantly different results. Future actuarial results may differ significantly from the current results presented in this report due to such factors as changes in plan experience or changes in economic or demographic assumptions.

Sincerely yours,

John J. Garrett ASA, FCA, MAAA
Principal and Consulting Actuary

Ben Mobley ASA, FCA, MAAA
Consulting Actuary

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REPORT OF THE ANNUAL GASB STATEMENT NO. 68
REQUIRED INFORMATION FOR THE
EMPLOYERS PARTCIPATING IN THE
CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM

PREPARED AS OF JUNE 30, 2020

SECTION I – INTRODUCTION

The Governmental Accounting Standards Board issued Statement No. 68 (GASB 68), *"Accounting and Financial Reporting For Pensions"* in June 2012. GASB 68's effective date is for an employer's fiscal year beginning after June 15, 2014. The Connecticut State Teachers' Retirement System (System) is a cost-sharing multiple employer defined benefit pension plan with a special funding situation.

This report, prepared as of June 30, 2020 (the Measurement Date), presents information to assist the employers participating in System in meeting the requirements of GASB 68 for the fiscal year ending June 30, 2021 (Reporting Date). Much of the material provided in this report is based on the data, assumptions and results of the annual actuarial valuation of the System as of June 30, 2020. The results of that valuation were detailed in a report dated November 5, 2020.

The Net Pension Liability (NPL) shown in the GASB Statement No. 67 Report for the Connecticut State Teachers' Retirement System prepared as of June 30, 2020 and submitted December 30, 2020 is the collective NPL used for purposes of GASB 68. Please refer to that report for the derivation of the collective NPL.

Pension Expense (PE) includes amounts for service cost (the normal cost under the Entry Age Normal actuarial cost method for the year), interest on the Total Pension Liability (TPL), changes in benefit structure, amortization of increases/decreases in liability due to actuarial experience and actuarial assumption changes, and amortization of investment gains/losses. The actuarial experience and assumption change impacts are amortized over the average expected remaining service life of the Plan membership as of the Measurement Date, and investment gains/losses are amortized over five years. The development of the collective PE is shown in Section IV.

The unamortized portions of each year's experience, assumption changes and investment gains/losses are used to develop deferred inflows and outflows, which also must be included in the employer's and non-employer contributing entities' financial statements. The development of the collective deferred inflows and outflows is shown in Section III.

The State makes all contributions to the System on behalf of employees of the participating districts. Therefore, participating employers are considered to be in a special funding situation as defined by GASB 68 and the State is treated as a non-employer contributing entity in the System. Since the districts do not contribute directly to the System, there is no NPL or deferred inflows or outflows to report in the financial statements of the districts. However, the notes to the financial statements must disclose the portion of the non-employer contributing entities' total proportionate share of the collective NPL that is associated with the employer. In addition, each district must recognize the total PE associated with the district as well as revenue in an amount equal to the non-employer contributing entities' total proportionate share of the collective PE associated with the district. The State, as a non-employer contributing entity, would report the entire collective amounts of the NPL, Deferred Inflows and Outflows and PE.

Schedule A of this report shows the total amount of employer contributions from the State as support provided to the districts for the year ending June 30, 2020. Schedule A also shows the proportionate share percentages that have been determined based on these contributions.

Based on these percentages we have determined the proportionate share amounts of the NPL associated with each participating employer and the employer PE and revenue for State support for each participating employer. These amounts are shown in Schedule B.

Section II of this report is a summary of the principal results of the collective amounts under GASB 68. Section III provides the results of all the necessary calculations, presented in the order laid out in GASB 68 for note disclosure and Section V shows the Required Supplementary Information (RSI).

SECTION II - SUMMARY OF COLLECTIVE AMOUNTS
($ IN THOUSANDS)

Valuation Date (VD):	June 30, 2020
Measurement Date (MD):	June 30, 2020
Reporting Date (RD):	June 30, 2021
Single Equivalent Interest Rate (SEIR):	
Long-Term Expected Rate of Return	6.90%
Municipal Bond Index Rate at Measurement Date	2.21%
Fiscal Year in which Plan's Fiduciary Net Position is projected to be depleted from future benefit payments for current members	N/A
Single Equivalent Interest Rate	6.90%
Collective Net Pension Liability:	
Total Pension Liability (TPL)	$ 37,128,000
Fiduciary Net Position (FNP)	18,281,910
Net Pension Liability (NPL = TPL – FNP)	$ 18,846,090
FNP as a percentage of TPL	49.24%
Collective Pension Expense (PE):	$2,699,613
Collective Deferred Outflows of Resources:	$4,891,980
Collective Deferred Inflows of Resources:	$565,948

SECTION III –NOTES TO FINANCIAL STATEMENTS

The material presented herein will follow the order presented in GASB 68. Paragraph numbers are provided for ease of reference. Amounts are shown in aggregate. Please refer to Schedule B of this report for the proportionate share of certain pension amounts as required by GASB 68.

Paragraphs 77 and 78(a)-(f): These paragraphs require information to be disclosed regarding the actuarial assumptions used to measure the TPL. The actuarial assumptions used in the June 30, 2020 valuation were based on the results of an actuarial experience study for the period July 1, 2015 – June 30, 2019. The complete set of actuarial assumptions utilized in developing the TPL are outlined in Schedule D. The TPL was determined by an actuarial valuation as of June 30, 2020, using the following key actuarial assumptions:

Inflation	2.50 percent
Salary increases	3.00 – 6.50 percent, including inflation
Investment rate of return	6.90 percent, net of pension plan investment expense, including inflation

Mortality rates were based on the PubT-2010 Healthy Retiree Table (adjusted 105% for males and 103% for females as ages 82 and above), projected generationally with MP-2019 for the period after service retirement. The PubT-2010 Disabled Retiree Table projected generationally with MP-2019 was used for the period after disability retirement. The PubT-2010 Contingent Survivor Table projected generationally with MP-2019 and set forward 1 year for both males and females was used for survivors and beneficiaries. The PubT-2010 Employee Table projected generationally with MP-2019 was used for active members.

The long-term expected rate of return on pension plan investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The current capital market assumptions and the target asset allocation as provided by the Treasurer's Office are shown in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic Equity Fund	20.0%	5.6%
Developed Market Intl. Stock Fund	11.0	6.0
Emerging Market Intl. Stock Fund	9.0	7.9
Core Fixed Income Fund	16.0	2.1
Inflation Linked Bond Fund	5.0	1.1
Emerging Market Debt Fund	5.0	2.7
High Yield Bond Fund	6.0	4.0
Real Estate Fund	10.0	4.5
Private Equity	10.0	7.3
Alternative Investments	7.0	2.9
Liquidity Fund	1.0	0.4

Discount rate. The discount rate used to measure the total pension liability was 6.90 percent. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that State contributions will be made at the actuarially determined rates in future years. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Paragraph 78 (g): This paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the System, calculated using the discount rate of 6.90 percent, as well as what the System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (5.90 percent) or 1-percentage-point higher (7.90 percent) than the current rate ($ thousands):

	1% Decrease (5.90%)	Current Discount Rate (6.90%)	1% Increase (7.90%)
Collective net pension liability	$23,571,019	$18,846,090	$14,923,429

Paragraph 80(a): This paragraph requires disclosure of the employer's proportionate share of the collective NPL and if an employer has a special funding situation the portion of the non-employer contributing entities' proportional share of the collective NPL that is associated with the employer. These amounts are shown in Schedule B.

Paragraph 80(b): This paragraph requires disclosure of the employer's proportion (percentage) of the collective NPL and the changes in proportion since the prior measurement date. 100% of the collective NPL is allocated to the State.

Paragraph 80(c): June 30, 2020 is the actuarial valuation date upon which the TPL is based.

Paragraph 80(d): Since the prior valuation, the Board adopted new assumptions as the result of an experience study for the five-year period ending June 30, 2019. The changes in assumptions are summarized below:
- Decrease the annual rate of real wage increase assumption from 0.75% to 0.50%.
- Decrease payroll growth assumption from 3.25% to 3.00%.
- Rates of withdrawal, disability, retirement, mortality, and assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience.

Paragraph 80(e): There were no changes in benefit provisions that affected the measurement of the TPL since the prior measurement date.

Paragraph 80(f): Not applicable.

Paragraph 80(g): Please see Section IV of this report for the development of the collective pension expense. The PE for each employer is shown in Schedule B.

Paragraph 80(h): Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce collective pension expense they are labeled deferred inflows. If they will increase collective pension expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average expected remaining service life of the active and inactive Plan members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five year period.

The table below provides a summary in the difference between projected and actual earnings on plan investments.

Investment Earnings (Gain)/Loss as of June 30, 2020 ($ thousands)	
a Expected asset return rate	6.90%
b Beginning of year market value assets (BOY)	$18,493,455
c End of year market value assets (EOY)	18,281,910
d Expected return on BOY for plan year (a x b)	1,276,048
External Cash Flow	
Contributions - employer	1,209,573
Contributions - member	318,217
Refunds of contributions	0
Benefits paid	(2,150,168)
Admin expenses	0
Other changes	522
e Net cash flow	(621,856)
f Expected return on net cash flow (a x 0.5 x e)	(21,454)
g Projected earnings for plan year (d + f)	1,254,594
h Net investment income (c - b - e)	410,311
Investment earnings (gain)/loss (g -h)	**844,283**

*Other changes are comprised of participating employer contributions for Early Retirement Incentive Plans, service purchases, etc.

The table below provides a summary of the determination of the average expected remaining service life for the entire Plan membership determined at the beginning of the year.

Category	Number (1)	Average Years of Working Lifetime (2)
a. Active Members	50,594	12.60
b. Inactive Members	48,931	0.00
c. Total	99,525	
Weighted Average Years of Working Lifetime [(a1 * a2) + (b1 * b2)]/c1		6.41

The table below provides a summary of the collective deferred inflows and outflows as of the Measurement Date. 100% of these amounts are allocated to the State.

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$0	$565,948
Changes of assumptions	4,117,548	0
Net difference between projected and actual earnings on plan investments	774,432	0
Employer contributions subsequent to the Measurement Date	0	0
Total	$4,891,980	$565,948

Paragraph 80(i): Collective amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in the collective pension expense as follows. 100% of these amounts are allocated to the State.

Deferred Amounts to be Recognized in Fiscal Years Following the Reporting Date:	
Year 1	$1,003,265
Year 2	1,147,742
Year 3	903,336
Year 4	866,336
Year 5	359,576
Year 6	45,777
Thereafter	0

Paragraph 80(j): The amount of revenue recognized for the support provided by non-employer contributing entities for the participating employers is provided in Schedule B.

SECTION IV – COLLECTIVE PENSION EXPENSE

As noted earlier, the collective Pension Expense (PE) consists of a number of different items. GASB 68 refers to the first as Service Cost which is the Normal Cost using the Entry Age Normal actuarial funding method. The second item is interest on the beginning Total Pension Liability (TPL) and the cash flow during the year at the 6.90% rate of return in effect as of the previous measurement date. The next three items refer to any changes that occurred in the TPL due to:

- benefit changes, or
- actual versus expected experience, or
- changes in actuarial assumptions.

Benefit changes, which are reflected immediately in PE, can be positive, if there is a benefit improvement for existing Plan members, or negative if there is a benefit reduction. For the year ended June 30, 2020, there were no changes.

The next item to be recognized is the portion of current year changes in TPL due to actual versus expected Plan experience for the year. The portion to recognize in the current year is determined by spreading the total change over the average expected remaining service life of the entire Plan membership determined at the beginning of the year. The average expected remaining service life of active members is the average number of years the active members are expected to remain active. For the year ended June 30, 2020 this number of years for the active members is 12.60. The average expected remaining service life of the inactive members is, of course, zero. Therefore, the number of years to use for the amortization is the weighted average for all active and inactive members, or 6.41 years.

The last item under changes in TPL are changes in actuarial assumptions. There were no changes in assumptions since the last measurement date. If there was a change in TPL due to changes in actuarial assumptions, recognition of the change would also be spread over the average expected remaining service life of the plan membership.

Member contributions for the year and projected earnings on the Fiduciary Net Position (FNP), again at the discount rate used to calculate the liabilities, are subtracted from the amount determined thus far. One-fifth of current period differences between projected and actual investment earnings on the FNP are recognized in the pension expense.

The current year portions of previously determined experience, assumption and earnings amounts, recognized as deferred outflows and inflows (see Section III) are included also. Deferred outflows are added to the PE while deferred inflows are subtracted from the PE. Finally, administrative expenses and other miscellaneous items are included.

The calculation of the Collective Pension Expense determined as of the measurement date is shown in the following table:

Collective Pension Expense Determined as of the Measurement Date ($ thousands)	
Service Cost at end of year	$616,370
Interest on the TPL and net cash flow	2,379,886
Current-period benefit changes	0
Expensed portion of current-period difference between expected and actual experience in the total pension liability	(47,800)
Expensed portion of current-period changes of assumptions	159,460
Member contributions	(318,217)
Projected earnings on plan investments	(1,254,594)
Expensed portion of current-period differences between projected and actual earnings on plan investments	168,857
Administrative expense	0
Other	(522)
Recognition of beginning deferred outflows of resources as pension expense	1,114,225
Recognition of beginning deferred inflows of resources as pension expense	(118,052)
Collective Pension Expense	**$2,699,613**

SECTION V – REQUIRED SUPPLEMENTARY INFORMATION

Paragraphs 81(a)-(b): CMC was not required to supply this information.

Paragraph 82:

Changes of benefit terms:

- 2019
  - HB 7424 made the following provision changes:
    - Beginning July 1, 2019, annual interest credited on mandatory contributions set at 4.0%.
    - For members retiring on or after July 1, 2019 with a partial refund option election (Plan N), if 50% of the benefits paid prior to death do not exceed the Member's mandatory contributions plus interest frozen at the date of the benefit commencement, the difference is paid to the Member's beneficiary.
- 2018
  - Beginning January 1, 2018, member contributions increased from 6% to 7% of salary.

Changes of assumptions:

- 2020
  - The Board adopted new assumptions as the result of an experience study for the five-year period ending June 30, 2019. The changes in assumptions are summarized below:
    - Decrease the annual rate of real wage increase assumption from 0.75% to 0.50%.
    - Decrease payroll growth assumption from 3.25% to 3.00%.
    - Rates of withdrawal, disability, retirement, mortality, and assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience.

- 2019
  - The Board adopted new assumptions in conjunction with HB 7424. The changes in assumptions are summarized below:
    - Reduce the inflation assumption from 2.75% to 2.50%.

- Reduce the real rate of return assumption from 5.25% to 4.40% which, when combined with the inflation assumption change results in a decrease in the investment rate of return assumption from 8.00% to 6.90%.
- Increase the annual rate of wage increase assumption from 0.50% to 0.75%.
- Phase in to a level dollar amortization method for the June 30, 2024 valuation.
- 2016
  - Rates of withdrawal, disability, retirement, mortality, and assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience. These assumptions were recommended as part of the Experience Study for the System for the five year period ended June 30, 2015.

Method and assumptions used in calculations of actuarially determined contributions. The actuarially determined contributions in the schedule of employer contributions are calculated as of June 30 each biennium for the fiscal years ending two and three years after the valuation date. The following actuarial methods and assumptions were used to determine the most recent contributions reported in that schedule:

Actuarial cost method	Entry age
Amortization method	Level percent of pay closed, grading to a level dollar amortization method for the June 30, 2024 valuation.
Single equivalent amortization period	30 years
Asset valuation method	4-year smoothed market
Inflation	2.50 percent
Salary increase	3.25-6.50 percent, including inflation
Investment rate of return	6.90 percent, net of investment related expense

CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM
Schedule of Employer Allocations as of June 30, 2020

Employers	2020 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
Andover	$ 509,728	0.042167%
Ansonia	3,986,188	0.329759%
Ashford	881,111	0.072890%
Avon	8,340,844	0.689999%
Barkhamsted	457,124	0.037816%
Berlin	6,536,158	0.540706%
Bethany	885,445	0.073249%
Bethel	6,826,453	0.564721%
Highville Chtr	494,147	0.040878%
Bloomfield	5,039,588	0.416902%
Bolton	2,040,227	0.168779%
Bozrah	504,208	0.041711%
Branford	7,641,976	0.632185%
Bridgeport	34,831,855	2.881478%
Bristol	16,407,871	1.357347%
Brookfield	5,966,554	0.493585%
Brooklyn	1,764,362	0.145957%
Cldrn Ctr Com Prog	100,051	0.008277%
Canaan	248,504	0.020558%
Canterbury	975,106	0.080666%
Canton	3,430,587	0.283797%
Chaplin	453,458	0.037512%
Cheshire	10,223,563	0.845748%
Chester	383,034	0.031687%
Clinton	4,415,392	0.365265%
Colchester	5,507,465	0.455607%
Amistad Acd	1,250,751	0.103469%
Colebrook	242,087	0.020027%
Columbia	1,217,753	0.100739%
Cornwall	256,680	0.021234%
Coventry	3,738,996	0.309310%
Cromwell	4,058,153	0.335712%
Danbury	22,860,655	1.891156%
Darien	13,503,553	1.117086%
Deep River	383,415	0.031718%
Derby	2,892,066	0.239247%
Eastford	351,231	0.029056%
East Granby	2,329,114	0.192677%

Employers	2020 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
East Haddam	$ 2,787,888	0.230629%
East Hampton	4,391,792	0.363313%
East Hartford	15,489,854	1.281404%
East Haven	5,833,014	0.482538%
East Lyme	6,351,938	0.525466%
Easton	2,253,839	0.186450%
East Windsor	3,081,658	0.254931%
Ellington	5,716,481	0.472898%
Enfield	11,334,513	0.937652%
Essex	579,372	0.047929%
Fairfield	25,930,023	2.145071%
Farmington	9,877,012	0.817080%
Franklin	381,982	0.031600%
Glastonbury	14,331,843	1.185607%
Granby	4,082,638	0.337738%
Greenwich	29,198,238	2.415435%
Griswold	3,569,367	0.295277%
Groton	10,804,674	0.893821%
Guilford	7,894,501	0.653076%
Hamden	13,219,329	1.093574%
Hampton	265,548	0.021968%
Hartford	38,223,993	3.162094%
Hartland	387,769	0.032078%
Hebron	1,608,558	0.133069%
Kent	536,642	0.044394%
Killingly	4,828,670	0.399454%
Lebanon	2,344,323	0.193935%
Ledyard	5,155,274	0.426472%
Lisbon	918,380	0.075973%
Litchfield	2,464,331	0.203863%
Madison	6,909,835	0.571619%
Manchester	15,798,759	1.306958%
Mansfield	3,177,135	0.262830%
Marlborough	1,144,848	0.094708%
Meriden	15,898,086	1.315175%
Middletown	11,178,520	0.924747%
Milford	15,021,252	1.242639%
Monroe	8,285,463	0.685418%
Montville	5,200,536	0.430216%
Naugatuck	8,638,094	0.714590%
New Britain	20,781,683	1.719172%
New Canaan	12,293,598	1.016992%
New Fairfield	5,944,317	0.491746%

Employers	2020 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
New Hartford	$ 977,127	0.080833%
New Haven	41,641,586	3.444813%
Newington	9,512,080	0.786890%
New London	6,759,925	0.559217%
New Milford	8,210,038	0.679178%
Newtown	10,361,957	0.857197%
Norfolk	203,616	0.016844%
North Branford	3,864,909	0.319726%
North Canaan	569,111	0.047080%
North Haven	7,492,840	0.619848%
No.Stonington	1,879,309	0.155467%
Norwalk	29,126,545	2.409504%
Norwich	6,892,740	0.570204%
NFA	4,881,100	0.403791%
Old Saybrook	3,562,552	0.294713%
Orange	2,934,220	0.242734%
Oxford	3,840,729	0.317726%
Plainfield	4,048,039	0.334875%
Plainville	5,331,641	0.441062%
Plymouth	3,083,288	0.255066%
Pomfret	826,249	0.068352%
Portland	2,789,449	0.230758%
Preston	1,032,938	0.085450%
Putnam	2,507,629	0.207445%
Redding	2,805,558	0.232091%
RSD 1	1,929,522	0.159620%
RSD 4	2,031,608	0.168066%
RSD 5	5,734,095	0.474355%
RSD 6	2,385,783	0.197365%
RSD 7	2,429,648	0.200994%
RSD 8	3,182,393	0.263265%
Ridgefield	12,758,685	1.055467%
Rocky Hill	6,608,626	0.546701%
Salem	914,741	0.075672%
Salisbury	697,169	0.057674%
Scotland	316,527	0.026185%
Seymour	4,635,288	0.383456%
Sharon	468,348	0.038744%
Shelton	10,669,017	0.882598%
Sherman	1,045,858	0.086519%
Simsbury	10,117,271	0.836955%
Somers	3,305,926	0.273484%
Southington	13,059,394	1.080343%

Employers	2020 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
S. Windsor	$ 10,521,422	0.870388%
Sprague	494,635	0.040919%
Stafford	3,516,365	0.290893%
Stamford	41,301,587	3.416689%
SDE	11,509,359	0.952116%
DCF Recq Home	462,631	0.038271%
Sterling	679,488	0.056211%
Stonington	4,758,442	0.393644%
Stratford	15,919,928	1.316982%
Suffield	5,266,738	0.435693%
Thomaston	1,891,580	0.156482%
Thompson	2,198,506	0.181872%
Tolland	5,007,725	0.414266%
Torrington	8,421,091	0.696638%
Trumbull	16,265,581	1.345576%
Union	180,582	0.014939%
Vernon	7,452,911	0.616545%
Voluntown	620,327	0.051317%
Wallingford	15,264,285	1.262744%
Waterbury	33,024,489	2.731963%
Waterford	6,767,538	0.559847%
Watertown	5,528,351	0.457335%
Westbrook	2,358,323	0.195093%
W.Hartford	22,997,590	1.902484%
West Haven	12,385,134	1.024565%
Weston	6,781,641	0.561014%
Westport	16,265,501	1.345570%
Wethersfield	8,096,871	0.669817%
Willington	1,094,208	0.090519%
Wilton	11,512,875	0.952407%
Winchester	1,423,893	0.117792%
Windham	6,850,544	0.566714%
Windsor	9,246,111	0.764888%
Windsor Locks	4,660,559	0.385546%
Winsted/Gilbert	1,039,847	0.086022%
Wolcott	4,847,636	0.401022%
Woodbridge	1,994,664	0.165009%
Woodstock	1,524,235	0.126093%
Woodstock Ad	2,154,066	0.178196%
UCONN	499,892	0.041354%
RSD 9	2,696,945	0.223106%
CCI Somers	61,614	0.005097%
RSD 10	5,128,394	0.424248%

Employers	2020 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
Supervision District	$ 1,075,217	0.088948%
NWCTC	97,386	0.008056%
MCTC	87,492	0.007238%
Norwalk CTC	117,671	0.009734%
WCSU	130,850	0.010825%
CCSU	455,636	0.037693%
ESCU	234,115	0.019367%
SCSU	565,630	0.046792%
RSD 11	634,405	0.052481%
CCTC	41,297	0.003416%
Hou CTC	176,803	0.014626%
Naug CTC	170,621	0.014115%
MCTC	141,156	0.011677%
Ed Connection	1,128,368	0.093345%
RSD 12	2,512,584	0.207854%
Gateway CTC	274,917	0.022743%
RSD 13	4,591,445	0.379829%
RSD 14	4,160,879	0.344210%
CCI Cheshire	61,412	0.005080%
Shared Svcs	469,838	0.038868%
CREC	23,704,635	1.960975%
RSD 15	8,698,326	0.719572%
RSD 16	4,666,930	0.386074%
TRCC (Mohegan)	95,395	0.007892%
Tunxis CTC	144,717	0.011972%
QVCC	22,054	0.001824%
Odyssey	592,725	0.049033%
CES	3,679,697	0.304404%
ACES	6,856,770	0.567229%
Project Learn	5,204,430	0.430538%
RSD 17	4,554,836	0.376801%
Asnun CTC	-	0.000000%
RSD 18	3,585,938	0.296648%
EASTCONN	2,316,416	0.191626%
BSBE	250,439	0.020718%
RSD 19	2,900,870	0.239976%
UCONN Health	377,165	0.031201%
CCI Niantic	37,335	0.003089%
Children's CTR	389,733	0.032241%
Bridges Academy	480,860	0.039779%
Common Ground	462,860	0.038290%
Explorations	261,339	0.021619%
Integrated Day	533,495	0.044134%

Employers	2020 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
Isaac	$ 488,729	0.040430%
Jumoke Academy	867,874	0.071795%
Side by Side	415,869	0.034403%
Trailblazers Academy	9,501	0.000786%
New Beginnings	675,321	0.055866%
Elm City CP	678,267	0.056110%
Stamford Academy	246,117	0.020360%
Park City	454,495	0.037598%
AF Bridgeport Academy	750,679	0.062100%
SERC	70,748	0.005853%
AF Hartford Acad	1,023,120	0.084638%
Brass City	412,200	0.034099%
Path Academy	-	0.000000%
Great Oaks Charter	209,503	0.017331%
Booker T. Washington (BTW)	479,359	0.039655%
Capitol Prep Harbor	711,063	0.058823%
Stamford Charter Excellence	231,267	0.019132%
Total	$ 1,208,819,000	100.000000%

CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM
Schedule of Pension Amounts by Employer as of June 30, 2020

Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District	Pension Expense and Revenue For State Support
Andover	$ 7,946,831	$ 1,138,346
Ansonia	62,146,678	8,902,217
Ashford	13,736,915	1,967,748
Avon	130,037,833	18,627,303
Barkhamsted	7,126,837	1,020,886
Berlin	101,901,939	14,596,969
Bethany	13,804,572	1,977,440
Bethel	106,427,828	15,245,282
Highville Chtr	7,703,905	1,103,548
Bloomfield	78,569,726	11,254,741
Bolton	31,808,242	4,556,380
Bozrah	7,860,893	1,126,036
Branford	119,142,154	17,066,548
Bridgeport	543,045,937	77,788,755
Bristol	255,806,837	36,643,116
Brookfield	93,021,473	13,324,885
Brooklyn	27,507,188	3,940,274
Cldrn Ctr Com Prog	1,559,891	223,447
Canaan	3,874,379	554,986
Canterbury	15,202,387	2,177,670
Canton	53,484,638	7,661,421
Chaplin	7,069,545	1,012,679
Cheshire	159,390,429	22,831,923
Chester	5,971,761	855,426
Clinton	68,838,171	9,860,741
Colchester	85,864,105	12,299,626
Amistad Acd	19,499,861	2,793,263
Colebrook	3,774,306	540,651
Columbia	18,985,363	2,719,563
Cornwall	4,001,779	573,236
Coventry	58,292,841	8,350,173
Cromwell	63,268,586	9,062,925
Danbury	356,408,962	51,053,893
Darien	210,527,033	30,156,999
Deep River	5,977,603	856,263
Derby	45,088,705	6,458,743
Eastford	5,475,920	784,400
East Granby	36,312,081	5,201,533

Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District	Pension Expense and Revenue For State Support
East Haddam	$ 43,464,549	$ 6,226,090
East Hampton	68,470,295	9,808,045
East Hartford	241,494,551	34,592,949
East Haven	90,939,546	13,026,659
East Lyme	99,029,795	14,185,548
Easton	35,138,535	5,033,428
East Windsor	48,044,526	6,882,150
Ellington	89,122,783	12,766,416
Enfield	176,710,740	25,312,975
Essex	9,032,742	1,293,898
Fairfield	404,262,011	57,908,616
Farmington	153,987,632	22,057,998
Franklin	5,955,364	853,078
Glastonbury	223,440,562	32,006,801
Granby	63,650,407	9,117,619
Greenwich	455,215,054	65,207,397
Griswold	55,648,169	7,971,336
Groton	168,450,310	24,129,708
Guilford	123,079,291	17,630,525
Hamden	206,095,940	29,522,266
Hampton	4,140,109	593,051
Hartford	595,931,081	85,364,301
Hartland	6,045,449	865,982
Hebron	25,078,304	3,592,348
Kent	8,366,533	1,198,466
Killingly	75,281,460	10,783,712
Lebanon	36,549,165	5,235,494
Ledyard	80,373,297	11,513,094
Lisbon	14,317,940	2,050,977
Litchfield	38,420,204	5,503,512
Madison	107,727,831	15,431,501
Manchester	246,310,481	35,282,808
Mansfield	49,533,178	7,095,393
Marlborough	17,848,755	2,556,749
Meriden	247,859,064	35,504,635
Middletown	174,278,652	24,964,590
Milford	234,188,864	33,546,444
Monroe	129,174,493	18,503,633
Montville	81,078,895	11,614,167
Naugatuck	134,672,275	19,291,165
New Britain	323,996,702	46,410,991
New Canaan	191,663,228	27,454,848
New Fairfield	92,674,894	13,275,239

Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District	Pension Expense and Revenue For State Support
New Hartford	$ 15,233,860	$ 2,182,178
New Haven	649,212,559	92,996,623
Newington	148,297,998	21,242,985
New London	105,390,539	15,096,695
New Milford	127,998,497	18,335,178
Newtown	161,548,118	23,141,002
Norfolk	3,174,435	454,723
North Branford	60,255,850	8,631,365
North Canaan	8,872,739	1,270,978
North Haven	116,817,112	16,733,497
No.Stonington	29,299,451	4,197,007
Norwalk	454,097,292	65,047,283
Norwich	107,461,159	15,393,301
NFA	76,098,815	10,900,794
Old Saybrook	55,541,877	7,956,110
Orange	45,745,868	6,552,879
Oxford	59,878,928	8,577,372
Plainfield	63,110,844	9,040,329
Plainville	83,122,941	11,906,967
Plymouth	48,069,968	6,885,795
Pomfret	12,881,679	1,845,239
Portland	43,488,860	6,229,573
Preston	16,103,984	2,306,819
Putnam	39,095,271	5,600,212
Redding	43,740,079	6,265,559
RSD 1	30,082,129	4,309,122
RSD 4	31,673,870	4,537,132
RSD 5	89,397,370	12,805,749
RSD 6	37,195,586	5,328,091
RSD 7	37,879,510	5,426,060
RSD 8	49,615,159	7,107,136
Ridgefield	198,914,261	28,493,524
Rocky Hill	103,031,762	14,758,811
Salem	14,261,213	2,042,851
Salisbury	10,869,294	1,556,975
Scotland	4,934,849	706,894
Seymour	72,266,463	10,351,828
Sharon	7,301,729	1,045,938
Shelton	166,335,213	23,826,730
Sherman	16,305,449	2,335,678
Simsbury	157,733,293	22,594,546
Somers	51,541,041	7,383,010
Southington	203,602,414	29,165,080

Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District	Pension Expense and Revenue For State Support
S. Windsor	$ 164,034,106	$ 23,497,108
Sprague	7,711,632	1,104,655
Stafford	54,821,957	7,852,985
Stamford	643,912,284	92,237,380
SDE	179,436,638	25,703,447
DCF Recq Home	7,212,587	1,033,169
Sterling	10,593,576	1,517,479
Stonington	74,186,503	10,626,865
Stratford	248,199,613	35,553,417
Suffield	82,111,095	11,762,025
Thomaston	29,490,739	4,224,408
Thompson	34,275,761	4,909,840
Tolland	78,072,943	11,183,579
Torrington	131,289,024	18,806,530
Trumbull	253,588,464	36,325,345
Union	2,815,417	403,295
Vernon	116,194,626	16,644,329
Voluntown	9,671,248	1,385,360
Wallingford	237,977,871	34,089,201
Waterbury	514,868,206	73,752,428
Waterford	105,509,269	15,113,702
Watertown	86,189,766	12,346,275
Westbrook	36,767,402	5,266,756
W.Hartford	358,543,847	51,359,705
West Haven	193,090,442	27,659,290
Weston	105,729,203	15,145,207
Westport	253,587,333	36,325,183
Wethersfield	126,234,315	18,082,467
Willington	17,059,292	2,443,663
Wilton	179,491,480	25,711,303
Winchester	22,199,186	3,179,928
Windham	106,803,430	15,299,085
Windsor	144,151,481	20,649,016
Windsor Locks	72,660,346	10,408,250
Winsted/Gilbert	16,211,784	2,322,261
Wolcott	75,576,967	10,826,042
Woodbridge	31,097,745	4,454,604
Woodstock	23,763,600	3,404,023
Woodstock Ad	33,582,979	4,810,602
UCONN	7,793,612	1,116,398
RSD 9	42,046,758	6,022,999
CCI Somers	960,585	137,599
RSD 10	79,954,160	11,453,054

Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District	Pension Expense and Revenue For State Support
Supervision District	$ 16,763,220	$ 2,401,252
NWCTC	1,518,241	217,481
MCTC	1,364,080	195,398
Norwalk CTC	1,834,478	262,780
WCSU	2,040,089	292,233
CCSU	7,103,657	1,017,565
ESCU	3,649,922	522,834
SCSU	8,818,462	1,263,203
RSD 11	9,890,616	1,416,784
CCTC	643,782	92,219
Hou CTC	2,756,429	394,845
Naug CTC	2,660,126	381,050
MCTC	2,200,658	315,234
Ed Connection	17,591,883	2,519,954
RSD 12	39,172,352	5,611,254
Gateway CTC	4,286,166	613,973
RSD 13	71,582,915	10,253,913
RSD 14	64,870,126	9,292,338
CCI Cheshire	957,381	137,140
Shared Svcs	7,325,098	1,049,286
CREC	369,567,113	52,938,736
RSD 15	135,611,187	19,425,659
RSD 16	72,759,854	10,422,504
TRCC (Mohegan)	1,487,333	213,053
Tunxis CTC	2,256,254	323,198
QVCC	343,753	49,241
Odyssey	9,240,803	1,323,701
CES	57,368,252	8,217,730
ACES	106,900,488	15,312,988
Project Learn	81,139,579	11,622,860
RSD 17	71,012,256	10,172,169
Asnun CTC	-	-
RSD 18	55,906,549	8,008,348
EASTCONN	36,114,008	5,173,160
BSBE	3,904,533	559,306
RSD 19	45,226,093	6,478,423
UCONN Health	5,880,169	842,306
CCI Niantic	582,156	83,391
Children's CTR	6,076,168	870,382
Bridges Academy	7,496,786	1,073,879
Common Ground	7,216,168	1,033,682
Explorations	4,074,336	583,629
Integrated Day	8,317,533	1,191,447

Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District		Pension Expense and Revenue For State Support	
Isaac	$	7,619,474	$	1,091,454
Jumoke Academy		13,530,550		1,938,187
Side by Side		6,483,620		928,748
Trailblazers Academy		148,130		21,219
New Beginnings		10,528,557		1,508,166
Elm City CP		10,574,541		1,514,753
Stamford Academy		3,837,064		549,641
Park City		7,085,753		1,015,000
AF Bridgeport Academy		11,703,422		1,676,460
SERC		1,103,062		158,008
AF Hartford Acad		15,950,954		2,284,898
Brass City		6,426,328		920,541
Path Academy		-		-
Great Oaks Charter		3,266,216		467,870
Booker T. Washington (BTW)		7,473,417		1,070,532
Capitol Prep Harbor		11,085,836		1,587,993
Stamford Charter Excellence		3,605,634		516,490
Total	$	18,846,090,000	$	2,699,613,000

SCHEDULE C

SUMMARY OF BENEFIT PROVISIONS EVALUATED

Covered Employees

Any teacher, principal, superintendent or supervisor engaged in service of public schools, plus professional employees at State schools of higher education if they choose to be covered.

Annual Salary

Annual Salary rate for service as a Connecticut teacher during a school year excluding amounts paid for extra duty assignments, coaching, unused sick time, unused vacation or terminal pay.

Average Annual Salary

Average of Annual Salary received during three years of highest salary.

Credited Service

One month for each month of service as a teacher in Connecticut public schools, maximum 10 months for each school year. Ten months of credited service constitutes one year of Credited Service. Certain other types of teaching service, State employment, or war-time military service may be purchased prior to retirement, if the Member pays one-half the cost.

Normal Retirement

Eligibility - Age 60 with 20 years of Credited Service in Connecticut, or 35 years of Credited Service including at least 25 years of service in Connecticut.

Benefit - 2% of Average Annual Salary times years of Credited Service (maximum benefit is 75% of Average Annual Salary)

In addition, amounts derived from the accumulation of mandatory contributions made prior to July 1, 1989 and voluntary contributions by the teacher are payable.

Minimum Benefit: Effective January 1, 1999, Public Act 98-251 provides a minimum monthly retirement benefit of $1,200 to teachers who retire under the Normal Retirement provisions and who have completed at least 25 years of full time Connecticut service at retirement.

Early Retirement

Eligibility - 25 years of Credited Service including 20 years of Connecticut service, or age 55 with 20 years of Credited Service including 15 years of Connecticut service.

Benefit - Reduced normal retirement benefit. The early retirement factors currently in effect are 6% per year for the first five years by which early retirement precedes the minimum normal retirement age and 4% per year for the next five years by which early retirement precedes the minimum normal retirement age. Effective July 1, 1999, the reduction for individuals with 30 or more years of service is 3% for each year by which early retirement precedes the minimum retirement age.

Proratable Retirement

Eligibility - Age 60 with 10 years of Credited Service.

Benefit - 2% less 0.1% for each year less than 20 years of Average Annual Salary times years of Credited Service in Connecticut, plus 1% of Average Annual Salary times years of additional Credited Service time.

Disability Retirement

Eligibility - 5 years of Credited Service in Connecticut if not incurred in the performance of duty and no service requirement if incurred in the performance of duty.

Benefit - 2% of Average Annual Salary times Credited Service to date of disability, but not less than 15% of Average Annual Salary, nor more than 50% of Average Annual Salary. In addition, disability benefit under this plan (without regard to any cost-of-living adjustments) plus any initial award of Social Security benefits and workers' compensation cannot exceed Average Annual Salary.

Termination of Employment

Less than 5 years of Credited Service - Return mandatory contributions with interest.

5 or more years of Credited Service - Return employee mandatory contributions with interest and 1% contributions made prior to July 1, 1989 without interest.

10 or more years of Credited Service - Member is 100% vested in the accrued benefit based on Credited Service and Average Annual Salary as of the date of termination of covered employment. Benefits are payable at age 60 and early retirement reductions are based on the number of years of service the member would have had if they had continued to work until age 60.

Member may elect return of all contributions plus interest on employee mandatory contributions in lieu of vested benefit.

Pre-Retirement Death Benefits

A lump sum plus one of the following: survivor's benefit, return of all contributions with interest, or surviving spouse's benefit.
- Lump Sum: $1,000 for the first 5 years of Connecticut service plus $200 per year thereafter. Maximum benefit: $2,000.
- Survivor's Benefit: For active teachers who die while in service, the family maximum benefit payable to survivors is $1,500 per month. Each minor child is entitled to $300 per month. The surviving spouse's benefit is $300 per month if the member has 12 or less years of service. For each additional year of service, the surviving spouse's monthly benefit is increased $25, up to a maximum of $600.
- Accumulated contributions with interest plus dependent children's benefits as described in the "Survivor's Benefit" paragraph.
- Surviving Spouse's Benefit: An active member who is eligible for immediate retirement and who has named his or her spouse as primary beneficiary will be covered by a 100% Plan D co-participant option in the event of his or her death prior to retirement.

Benefit Options

Normal form: Partial Refund Option – For any member who retires prior to July 1, 2019, 75% of total benefit is paid as a life annuity. If 25% of the benefits paid prior to death do not exceed the Member's mandatory contributions plus interest frozen at the date of the benefit commencement, the difference is paid to the Member's beneficiary. For members retiring on or after July 1, 2019, 50% of total benefit is paid as a life annuity. If 50% of the benefits paid prior to death do not exceed the Member's mandatory contributions plus interest frozen at the date of the benefit commencement, the difference is paid to the Member's beneficiary.

Optional Forms: 5-, 10-, 20-, or 25-year certain and life and 33-1/3%, 50%, 66-2/3%, 75%, or 100% co-participant annuity (if co-participant dies first, benefit reverts to unreduced amount). Amounts payable under the optional forms are determined on an actuarially equivalent basis as set by the board.

Cost-of-Living Allowance

For teachers who retired prior to September 1, 1992, pension benefit adjustments are made in accordance with increases in the Consumer Price Index, with a minimum of 3% and a maximum of 5% per annum.

For teachers who were members of the Teachers' Retirement System before July 1, 2007, and retire on or after September 1, 1992, pension benefit adjustments are made that are consistent with those provided for Social Security benefits on January 1 of the year granted, with a maximum of 6% per annum. If the return on assets in the previous year was less than 8.5%, the maximum increase is 1.5%.

For teachers who were members of the Teachers' Retirement System after July 1, 2007, pension benefit adjustments are made that are consistent with those provided for Social Security benefits on January 1 of the year granted, with a maximum of 5% per annum. If the return on assets in the previous year was less than 11.5%, the maximum increase is 3%, and if the return on the assets in the previous year was less than 8.5%, the maximum increase is 1.0%

Teachers' Mandatory Contribution

Effective July 1, 1992, each teacher is required to contribute 6% of annual salary for the pension benefit. Beginning January 1, 2018, each teacher is required to contribute 7% of annual salary. Beginning July 1, 2019, annual interest credited on mandatory contributions set at 4.0%.

State Contribution

The State's contribution requirement is determined in accordance with Section 10-183z (as amended by Section 88 of Public Act 19-117).

Early Retirement Incentive

A local or regional board of education may establish a retirement incentive plan. The plan shall provide for purchase of additional credited service by a board of education and a member of the system who chooses to participate in the plan, of additional credited service for such member and for payment by the board of education of not less than fifty per cent of the entire cost of such total cost. Any such plan shall specify a maximum number of years to be purchased, not to exceed five. Members must have attained age 50 and be eligible for retirement with the additional purchased service. The amount of service purchased cannot exceed the lesser of five years and one-fifth of the member's credited service.

SCHEDULE D

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

Investment Rate of Return

Assumed annual rate of 6.90% net of investment expenses.

Rates of Annual Salary Increase

Rates of Annual Salary Increase Assumption	
Years of Service	
0	6.50%
1	6.25
2	6.00
3	6.00
4	6.00
5	6.00
6	6.00
7	6.00
8	6.00
9	6.00
10	5.50
11	5.50
12	5.25
13	5.00
14	4.75
15	4.50
16	4.00
17	3.75
18	3.50
19	3.25
20	3.00
21+	3.00

Active Member Decrement Rates

a. Table below provides a summary of the assumed rates of service retirement.

Annual Rates of Retirement				
		Unreduced		
Age	Less than 35 years of Service		35 or more years of Service	
	Male	Female	Male	Female
50			35.0%	30.0%
55			35.0%	30.0%
60	20.0%	20.0%	30.0%	30.0%
65	27.5%	32.5%	35.0%	37.5%
70	27.5%	30.0%	30.0%	32.5%
75	100.0%	100.0%	100.0%	100.0%

Annual Rates of Retirement				
Age	Proratable		Reduced	
	Male	Female	Male	Female
50			1.50%	1.25%
52			1.50%	1.25%
54			2.00%	2.25%
56			4.00%	3.75%
58			6.50%	5.50%
60	6.0%	5.0%		
65	15.0%	12.0%		
70	28.5%	15.0%		
75	28.5%	15.0%		
80	100.0%	100.0%		

b. Table below provides a summary of the assumed rates of mortality while actively employed and disability.

Annual Rates of Disability		
Age	Male	Female
20	0.020%	0.020%
25	0.020%	0.020%
30	0.020%	0.020%
35	0.020%	0.030%
40	0.030%	0.060%
45	0.080%	0.090%
50	0.150%	0.150%
55	0.150%	0.170%
60	0.150%	0.150%

c. Table below provides a summary of the assumed rates of withdrawal for active members prior to eligibility for retirement.

Annual Rates of Withdrawal					
			10 or more years of service		
Years of Service	**Male**	**Female**	**Age**	**Male**	**Female**
0	15.00%	12.00%	25	1.80%	6.00%
1	11.00	11.00	30	1.80	6.00
2	8.50	9.50	35	1.80	4.25
3	7.00	8.00	40	1.80	2.50
4	5.50	7.50	45	1.80	2.00
5	4.50	7.00	50	2.25	2.40
6	4.00	6.50	55	4.00	3.90
7	3.50	6.00	59	5.50	4.00
8	3.50	5.50			
9	3.50	5.00			

Pre-Retirement Mortality

The PubT-2010 Employee Table projected generationally with MP-2019 is used for both males and females while in active service. Representative values of the assumed annual rates of mortality while in active service are as follows:

Annual Rates of Death*		
Age	**Male**	**Female**
30	0.022%	0.014%
35	0.030%	0.020%
40	0.042%	0.031%
45	0.067%	0.048%
50	0.111%	0.073%
55	0.172%	0.107%
60	0.264%	0.161%
65	0.435%	0.270%

* Rates shown are for 2010, the base year of the table.

Post-Retirement Mortality

The PubT-2010 Healthy Retiree Table (adjusted 105% for males and 103% for females at ages 82 and above) projected generationally with MP-2019 is used for the period after service retirement. The PubT-2010 Disabled Retiree Table projected generationally with MP-2019 is used for the period after disability retirement. The PubT-2010 Contingent Survivor Table projected generationally with MP-2019 and set forward 1 year for both males and females is used for survivors and beneficiaries. Representative values of the assumed annual rates of mortality are as follows:

	Annual Rates of Death*					
	Healthy		**Disabled**		**Survivor**	
Age	Male	Female	Male	Female	Male	Female
50	0.111%	0.073%	1.605%	1.483%	0.724%	0.342%
55	0.223%	0.193%	2.114%	1.742%	0.854%	0.476%
60	0.357%	0.287%	2.503%	1.956%	1.067%	0.667%
65	0.592%	0.446%	3.044%	2.256%	1.497%	0.973%
70	1.070%	0.770%	3.901%	2.862%	2.335%	1.478%
75	2.031%	1.461%	5.192%	4.003%	3.706%	2.371%
80	3.960%	2.868%	7.348%	6.007%	5.897%	3.985%
85	7.598%	5.548%	10.815%	9.331%	9.658%	7.122%
90	13.923%	10.392%	16.253%	13.665%	15.947%	12.596%

* Rates shown are for 2010, the base year of the tables

Asset Valuation Method

Market value of assets is used for GASB 68 disclosure purposes.

Actuarial Cost Method

The Entry Age Normal actuarial cost method allocates the plan's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of payroll necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

The unfunded accrued liability is determined by subtracting the actuarial value of assets from the actuarial accrued liability. The UAAL as of June 30, 2018 is amortized as a level percent of pay and will grade to a level dollar method beginning with the June 30, 2024 valuation. Future changes to the UAAL will be amortized utilizing layered 25-year closed amortization bases established at the end of each plan year.

Payroll Growth Rate

This assumption only applies to the level percent of pay amortization method. The total annual payroll of active members is assumed to increase at an annual rate of 3.00%. This rate does not anticipate increases in the number of members. This rate will grade to 0% in the following steps: 2.40% for the FY 2022 payment, 1.80% for the FY 2023 payment, 1.20% for the FY 2024 payments, 0.60% for the FY 2025 payment and 0% for fiscal years thereafter.

Future Cost-of-living Increases

Members who retired prior to September 1, 1992 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 3.0%. Members who retired on or after September 1, 1992 and were hired prior to July 1, 2007 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 2.0%. Members who retired on or after September 1, 1992 and were hired on or after July 1, 2007 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 1.75%.

Marriage Assumption

85% of males and 75% of females assumed to be married, with female spouses 3 years younger than males.

Plan N Partial Refund Option (Normal Form of Payment):

For any member who retires prior to July 1, 2019, upon death, the member's beneficiary will receive a lump sum payment of the member's contributions with interest to the member's date of retirement less 25% of the total payments received to the member's date of death. A 12-year Certain and Life payment form be used to approximate the Plan N option where available data does not allow liabilities to be calculated directly.

For any member who retires on or after July 1, 2019, upon death, the member's beneficiary will receive a lump sum payment of the member's contributions with interest to the member's date of retirement less 50% of the total payments received to the member's date of death. A 9-year Certain and Life payment form be used to approximate the Plan N option where available data does not allow liabilities to be calculated directly.

Changes from Prior Valuation

Since the prior valuation, the Board adopted new assumptions in conjunction with the Experience Investigation for the Five-Year Period Ending June 30, 2019. The changes in assumptions are summarized below:

Economic Assumptions

1. Decrease the annual rate of wage increase assumption from 0.75% to 0.50%.
2. Minor changes to the merit portion of the salary scale.
3. Reduce the payroll growth assumption from 3.25% to 3.00%.

Demographic Assumptions

1. Update mortality tables to the PubT-2010 mortality tables with generational mortality using MP-2019.
2. Modest adjustments to unreduced and proratable retirement rates. Decrease early retirement rates.
3. Increase in rates of withdrawal.
4. Decrease in rates of disability.